AMSIE'95 Speaker Abstract Form

Deadline: Postmarked by November 15, 1994

Speaker Name: Dr. Ara Chutjian

Session Name: Microminiaturization of Sensors and Electronics Devices

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Miniature Arrays of Quadrupole and Ion Trap Mass Spectrometers.

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Miniature mass spectrometers, with dimensions of the orders of cm or less, find a variety of uses in NASA's long-duration life-support systems (for shuttle, Space Station, Mars missions), in planetary aeronomy (flybys and entries), in comet **rendezvous-lander missions; and closer to home in contamination site characterization, certification and monitoring. Recent JPL results in the miniaturization of two versatile types of mass spectrometers will be described. The spectrometers are the quadruple and ion trap, used in *parallel arrays* in which the sensitivity of each device is maintained over its macroscopic version by having a 10 x 10 (at least) array to compensate for lost input aperture area. Requirements for ionizers and detectors will be discussed, as well as the need to maintain dimensional tolerances at the 0.1-0.2% level. The quadruple and ion trap devices are each built in two ways: one with small rods (or holes) and spacers made by conventional machining methods, the other using micromachining (developed resist and metal plating) methods.**

[Co-authors: M. H. Hecht, O. J. Orient, G. H. Voecks (JPL/Caltech)]

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